

What is claimed is:

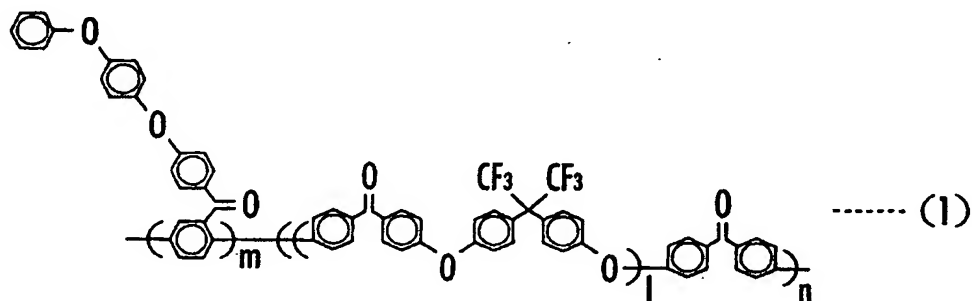
1. An electrode structure for a polymer electrolyte fuel cell comprising a pair of electrode catalyst layers containing carbon particles supporting platinum particles as a catalyst and a polymer electrolyte membrane sandwiched between the electrode catalyst layers, wherein

said polymer electrolyte membrane is made of a sulfonated polyarylene-based polymer;

said sulfonated polyarylene-based polymer has an ion exchange capacity in the range of 1.7 to 2.3 meq/g; and

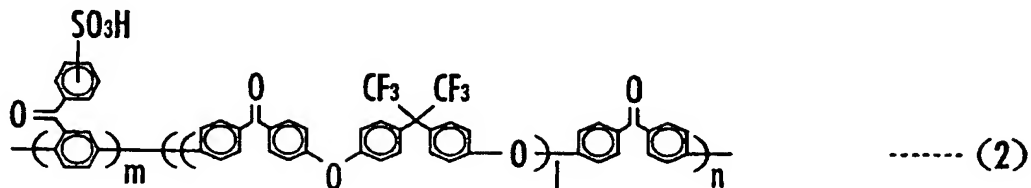
said polymer contains a component insoluble in N-methylpyrrolidone in an amount of 70% or less relative to the total amount of the polymer, after said polymer is subjected to heat treatment for exposing the same under a constant temperature atmosphere of 120°C for 200 hours.

2. The electrode structure for a polymer electrolyte fuel cell according to claim 1, wherein said sulfonated polyarylene-based polymer is a sulfonated product of a copolymer represented by formula (1):



3. The electrode structure for a polymer electrolyte fuel cell according to claim 1, wherein said sulfonated

polyarylene-based polymer is a copolymer represented by formula (2):



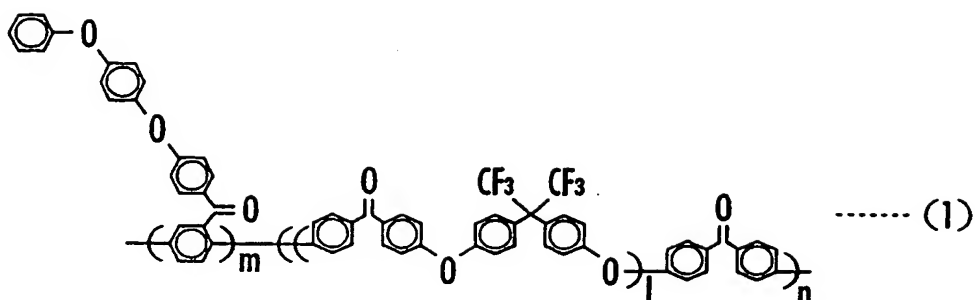
4. A method for manufacturing an electrode structure for a polymer electrolyte fuel cell comprising a pair of electrode catalyst layers containing carbon particles supporting platinum particles as a catalyst and a polymer electrolyte membrane sandwiched between the electrode catalyst layers, wherein said polymer electrolyte membrane is made of a sulfonated polyarylene-based polymer, comprising the steps of:

forming a polymer electrolyte membrane from a solution of a sulfonated polyarylene-based polymer;

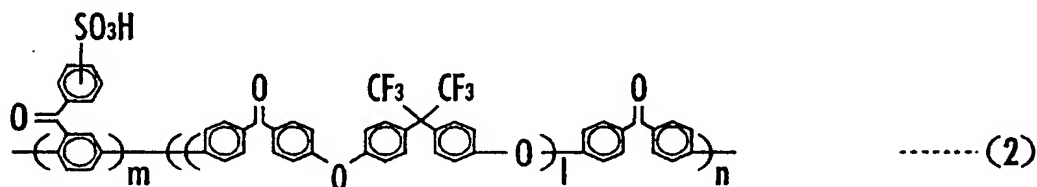
coating a catalyst paste containing catalyst particles in which platinum particles are supported on carbon particles and a polymer electrolyte on a sheet-like support and drying the same to form an electrode catalyst layer; and

thermally transferring to join said electrode catalyst layer to both sides of the polymer electrolyte membrane containing a solvent in the range of 0.5% or less by weight of the total membrane.

5. The method for manufacturing an electrode structure for a polymer electrolyte fuel cell according to claim 4, wherein said sulfonated polyarylene-based polymer is a sulfonated product of a copolymer represented by formula (1):



6. The method for manufacturing an electrode structure for a polymer electrolyte fuel cell according to claim 4, wherein said sulfonated polyarylene-based polymer is a copolymer represented by formula (2):



7. A polymer electrolyte fuel cell comprising an electrode structure for a polymer electrolyte fuel cell comprising a pair of electrode catalyst layers containing carbon particles supporting platinum particles as a catalyst and a polymer electrolyte membrane sandwiched between the electrode catalyst layers, wherein

said polymer electrolyte membrane is made of a sulfonated polyarylene-based polymer;

said sulfonated polyarylene-based polymer has an ion exchange capacity in the range of 1.7 to 2.3 meq/g; and

said polymer contains a component insoluble in N-methylpyrrolidone in an amount of 70% or less relative to the total amount of the polymer, after said polymer is subjected to heat treatment for exposing the same under a constant temperature atmosphere of 120°C for 200 hours.

8. An electrical apparatus using a polymer electrolyte fuel cell comprising an electrode structure for a polymer electrolyte fuel cell comprising a pair of electrode catalyst layers containing carbon particles supporting platinum particles as a catalyst and a polymer electrolyte membrane sandwiched by the electrode catalyst layers, wherein

said polymer electrolyte membrane is made of a sulfonated polyarylene-based polymer;

said sulfonated polyarylene-based polymer has an ion exchange capacity in the range of 1.7 to 2.3 meq/g; and

said polymer contains a component insoluble in N-methylpyrrolidone in an amount of 70% or less relative to the total amount of the polymer, after said polymer is subjected to heat treatment for exposing the same under a constant temperature atmosphere of 120°C for 200 hours.

9. A transport apparatus using a polymer electrolyte fuel cell comprising an electrode structure for a polymer electrolyte fuel cell comprising a pair of electrode catalyst layers containing carbon particles supporting platinum particles as a catalyst and a polymer electrolyte membrane sandwiched by the electrode catalyst layers, wherein

said polymer electrolyte membrane is made of a sulfonated polyarylene-based polymer;

said sulfonated polyarylene-based polymer has an ion exchange capacity in the range of 1.7 to 2.3 meq/g; and

said polymer contains a component insoluble in N-methylpyrrolidone in an amount of 70% or less relative to the total amount of the polymer, after said polymer is subjected

to heat treatment for exposing the same under a constant temperature atmosphere of 120°C for 200 hours.